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ABSTRACT

A unit of study on plants grown in the Navajo community of Rough Rock, Arizona, is presented in sketches providing the common Navajo name for the plant, a literal English translation, the English name of the plant, and the Latin name. A brief description of each plant includes where the plant grows, how the Navajos use the plant, and the color and effects of the plant. Plants included in the unit of study are pinyon pine, Utah juniper, narrowleaf yucca, Spanish bayonet, crimson hedgehog, wild celery, prickly pear cactus, hymenopappus, penstemmon, bristly hidden flower, globemallow, sego lily, sand verbena, tomatillo, and shadscale. Other plants described are scarlet gilia, heart-leaved twist flower, Mormon tea, cliffrose, lupine, serviceberry, fendler bush, Douglas fir, Ponderosa pine, and locoweed. (ERB)

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PLANT COMMUNITIES of Rough Rock

Text and Illustrations by
Linda Jacobs

Text with the Assistance of Rough Rock Community Members*

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Notes To The Teacher

When a child first learns to talk, he begins by learning the names of the everyday objects around him. These names give him a satisfying feeling, because he now can communicate his needs and ideas. A first step in the study of plants has a similar focus. The artist does not need to place names upon objects, for he can communicate visually through color, form, and environment. The naturalist, however, must communicate through words.

The plants on the following pages have been given three names. In reality, each probably has several more. The first is a common Navajo name. Below this name, in quotation marks, is a literal English translation. At the bottom of each page is one common English name for the plant. Below this and underlined is the plant's Latin name. The Latin name is special. There may be several English and Navajo terms for the same plant, and these same terms may be applied to several different plants. On the other hand, there is only one Latin name and no other plant is called by this name. Scientists who want to know for certain that they are talking about the same plant use the Latin term. The first part of the name is the *genus*. It identifies the group or "clan" to which the plant belongs. The second part is the *species*. The species identifies a specific member of that plant group. Generally, the Latin term is only useful when talking to scientists, but it is helpful in any serious attempt to study plants. In some cases, the various species of a given plant group are difficult to tell apart. In this case, only the genus is given.

The naturalist's interest expands from the name of plants to the forms of plant growth, the interrelationships between plants, animals, and the environment, seasonal changes, survival, and human use of plants. In the actual process of discovering the name for a plant, the naturalist learns the multiple variations of leaf form, flower structure, and growth habits of the plants. He becomes more observant.

This ability to observe and discriminate in nature is most developed in those who spend their lives living close to the land. I was looking for flowers on the plains beyond Rough Rock one day in the company of the daughter of one of our school teachers. She stopped quickly to kick a small plant out of the dirt, reached down and picked it up. She went on, and again kicked a plant out of the dirt and picked it up. I walked along with her, hoping to find one plant myself before she picked it, but she was finding them faster than I could focus my eyes on the ground. She knew the name of the plant and its use. This ability is easily overlooked as an important part of a child's education -- especially when the child is removed from the natural environment.

In many cultures, the herbalist's knowledge is passed on orally from generation to generation. The herbalist may have a child or grandchild who accompanies him or her in search of plants. In so doing, the child learns the uses of plants and where they grow. The herbalist who has not passed on knowledge in this way may suddenly find, in old age, that there is no time left to teach a younger relative these mysteries. The knowledge may, therefore, be lost.

The information here has been compiled to help prevent this loss. The information is based on the author's research and observations, and the knowledge and experience of Navajo elders living near Rough Rock.

Plants are important to human life -- they make us feel comfortable in our environment. When I lived in the high mountains of Columbia, South America, I often felt homesick. Although the mountains were beautiful, one of my strangest feelings was being surrounded by foreign plants which I did not recognize and which, for me, had no names. I recognized the red geraniums which we had often grown at the front of our house back home, but here they grew as tall as bushes. One lone apple tree grew in a thicket nearby, but its fruit was small, hard and green. The immigrant to a foreign land often brings with him the flowers of his homeland. Their blossoms make him feel more at home, and he will spend considerable time tending them. A friend excitedly told me that, on returning to his home after ten years' absence, he remembered the name of every plant.

A knowledge and familiarity with plants of one's homeland is thus an important part of a child's growth and development, and should not be overlooked in his formal education. Resource people who possess this cultural knowledge should be sought out to supplement the information provided here. In addition, children should be encouraged to observe and discriminate the natural world around them. As a start, you may wish to initiate guided walks near the school. At Rough Rock, this activity has the added interest of variation in plant communities as one climbs the mesa. A presentation of the materials contained here used with local resource people and natural observation activities, will afford children at all grade levels a comprehensive learning experience on the plant life around them.

Linda Jacobs
Rough Rock, Arizona
January, 1983

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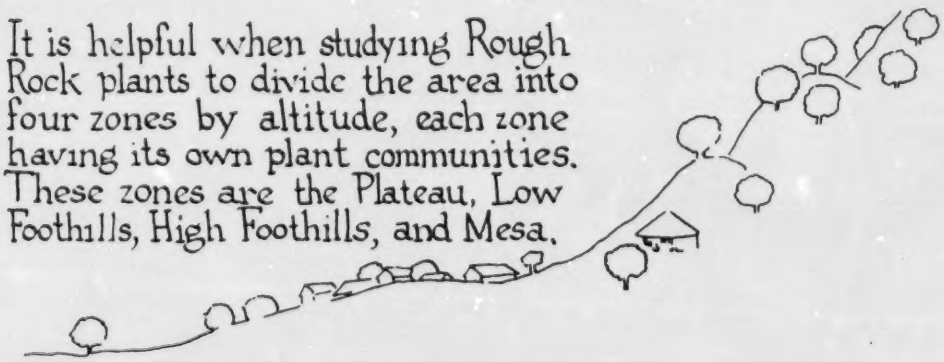
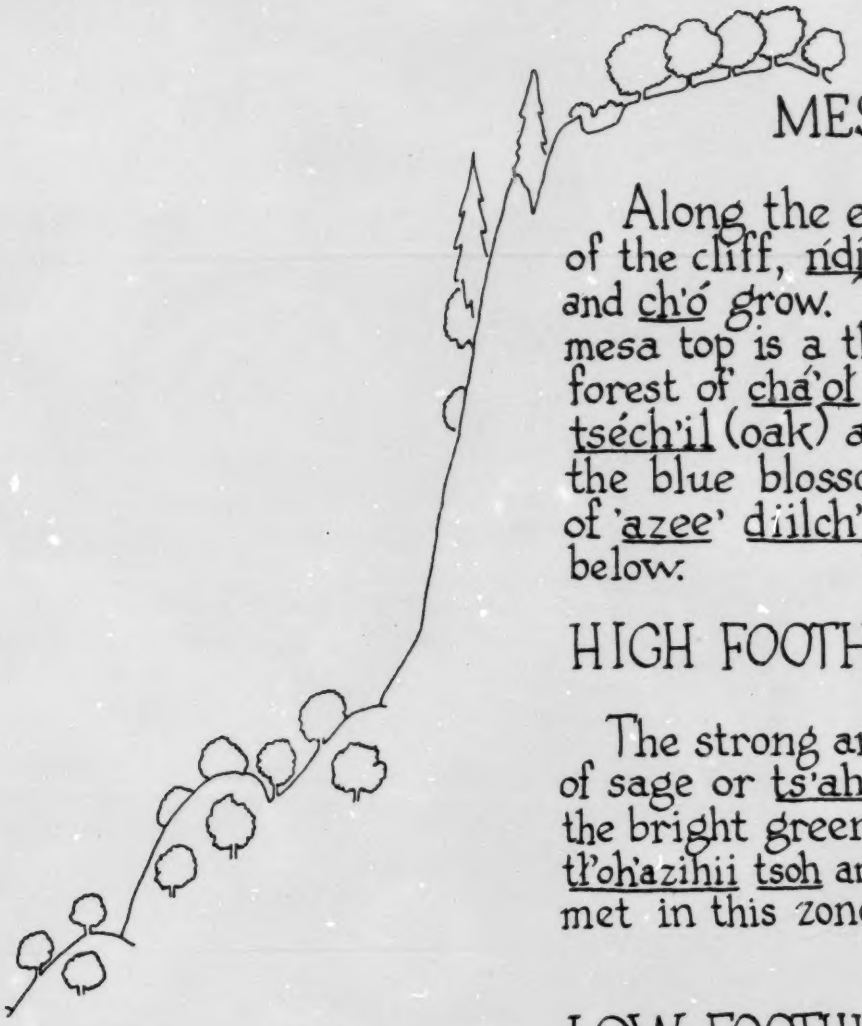
Plant Communities of Rough Rock

Plants which need certain growing conditions, such as water, temperature, type of soil, and light, usually grow together with other plants which need the same conditions. These plants form plant communities. Within the plant communities, plants help each other, but also compete. For example, a plant may grow well when shaded from the hot sun and protected from the wind by a nearby tree, but the tree competes with other trees for water. In the driest areas, the trees stand far apart. Where water is plentiful, trees and other plants crowd together.

The altitude, or height above sea level, has a strong influence on rainfall and temperature, and thus a strong influence on plant communities. As one climbs from Rough Rock to the top of the mesa, one goes from 6,000 feet altitude to 8,000 feet altitude. At the top, the air is cooler and the soil is moister.

It is helpful when studying Rough Rock plants to divide the area into four zones by altitude, each zone having its own plant communities. These zones are the Plateau, Low Foothills, High Foothills, and Mesa.





8,000 ft.

MESA

Along the edges of the cliff, ńdíshchíí and ch'ó grow. The mesa top is a thick forest of chá'oł with tséch'il (oak) and the blue blossoms of 'azee' dііlch'iłii below.

HIGH FOOTHILLS 7,250 ft.

The strong aroma of sage or ts'ah and the bright green of tł'oh'azihii tsoh are first met in this zone.

LOW FOOTHILLS 6,750 ft.

A varied area of steep foothills and narrow washes. The prominent plants are chá'oł and gad.

PLATEAU 6,250 ft.

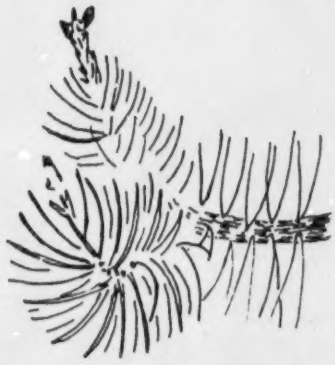
Grasslands. 6,000 ft.

COMMON PLANTS OF THE PLATEAU

CHÁ'OŁ

The most common tree of the Rough Rock area, chá'oł or pinyon produces bináá' or nuts which are edible and contain important nutrients. The crops are best in certain parts of the high mesa, where conditions are right for nut production. The seeds can be roasted and mashed to make a butter called 'atł'ish.

The needles occur in bundles of two each.



A black dye is made from bijeeh or pinyon gum by roasting it with łeetsoii, a yellow ochre, and mixing the powder with a tea of chiiłchin or sumac leaves.

Pinyon Pine
Pinus edulis

GAD

The bark of gad or juniper shreds easily. It was once woven into clothing and also curtains, which were hung at the hooghan door. The wood is used as the stick or k'eet'áán in the Enemyway ceremony. Gad charcoal is used for black in sandpaintings

Gad leaves are small and overlap. A tea of the branches helps women regain strength after childbearing. The twigs and berries are boiled to make a tan dye for wool. The dried berries are strung to make necklaces.

Utah Juniper
Juniperus osteosperma

TSÁ'ÁSZI' TS'ÓÓZ

"narrow standing awl"

This yucca has narrow leaves with the single flower stalk rising well above the tips of the leaves. It is pollinated by the yucca moth, who lays its eggs in the flower. The roots are used as a soap for hairwashing. The fibers in the leaves were used to make cord for mats, shoes, and blankets.

Narrowleaf Yucca
Yucca angustifolia

TSÁ'ÁSZI' NITEELÍ

"broad standing awl"

This yucca has wide leaves and a branched flower stalk which rises just above the tips of the leaves. The ripe fruit or hashk'aan is eaten raw, baked, or dried for winter use. The dried cakes are later mixed with water to make a syrup, and are eaten with meat and bread. They are also boiled with cornmeal to make a gruel. A large stand of this yucca is in the low foothills on the mesa road.

Spanish Bayonet
Yucca baccata

'AJÉÍNÁYOOGÍSHÍ

"the heart twister"

'Ajéínáyoogíshí is the first cactus to bloom in the spring. It has showy red flowers. The fruit of this cactus is believed to be poisonous. It "twists the heart".

Crimson Hedgehog
Echinocereus triglochidiatus

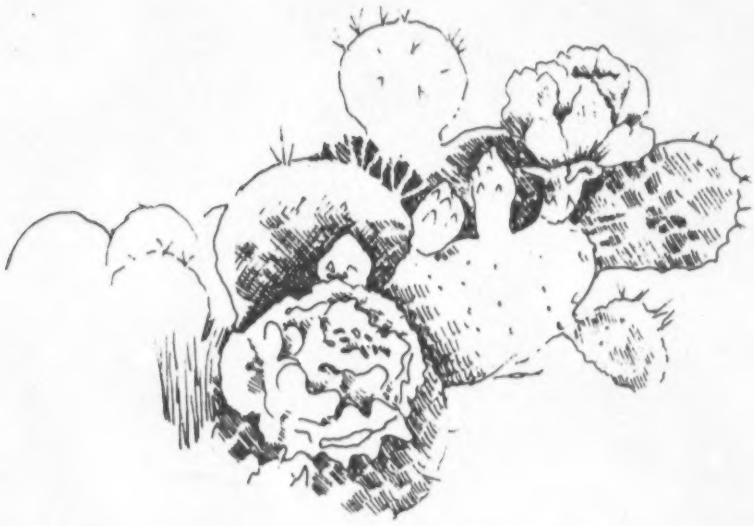
HAZA'ALEEH

Haza'aleeh is a small plant, three inches across. The flowers are yellow, and the stem and fruit are purple. It grows on flat open ground near the sheep corrals. It is picked and dried. Later it is added as an herb to mutton stew.

Wild celery
Cymopterus glomeratus

HOSH NITEELÍ

"wide cactus"



There are three species of prickly pear around Rough Rock. The one shown above is the first to bloom. It has lovely pink flowers with yellow stamens. In the high foothills, there is one with yellow blossoms and small pads. The latest to bloom has larger pads and yellow flowers.

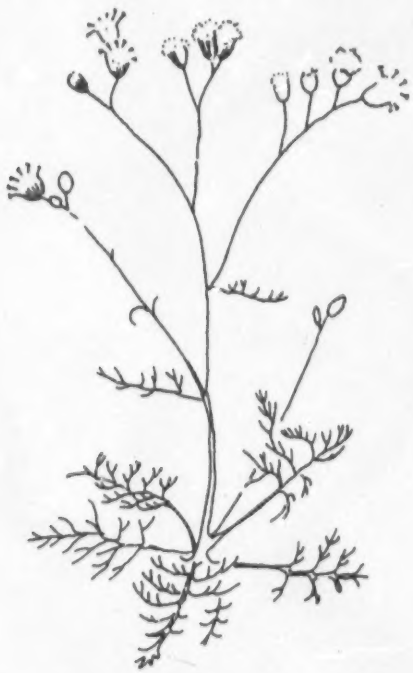
The fruits are picked with a forked stick. The spines are removed. The fruit is then split and dried in the sun. They can be eaten as dried fruit. A dye made from the fruit turns wool pink.

Hosh niteelí has glochids, which are spines with small hooks. These hooks make it difficult and painful to pull the spines out of the skin.

Prickly Pear
Opuntia sp.

'AZEE' HAŁDZID

"decayed medicine"



flower detail

This plant with yellow petalless flowers stands about one foot tall. 'Azee' haldzid can be found on the sandy slopes behind the school. It is dried and used with three to six other herbs, all known as "life medicine" or'iiná azee'. The herbs are mixed with water, and applied internally as well as externally. The leaves of this plant are grayish and finely divided. The base of the plant is woolly white. A related species, Hymenopappus lugens, has green leaves clustered at the root.

Hymenopappus
Hymenopappus filifolius

DAH YIITĮ́HÍ DĄ́Ą́ TS'ÓÓZ

"slender hummingbird food"

Hummingbirds drink the nectar of the red flowers. An'ijná azee' or life medicine, this plant is used to treat spider and snake bites, stomach troubles, and backaches.

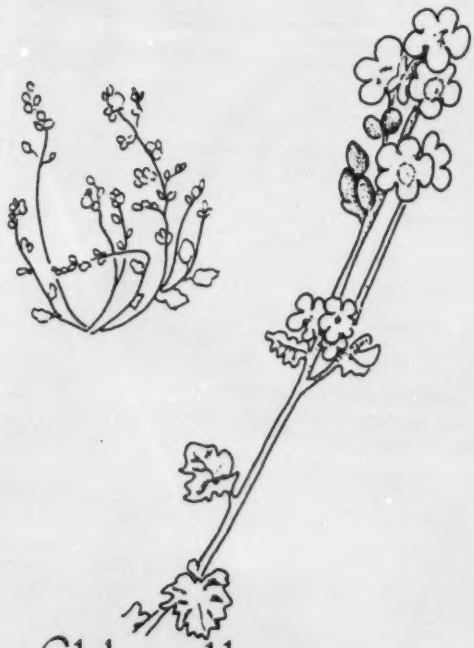
Penstemmon
Penstemmon sp.

TSĄ́HALTS'AA'

"hollow stomach"

This plant is only four inches tall and has tiny white flowers with five petals. The stems and the edges of the leaves are bristly. A tea made from this plant "keeps you slender".

Bristly Hidden Flower
Cryptantha sp.



'AZEE' NITŁ'INÍ

"gummy medicine"

This red-orange flower is common along the roadsides and on the school grounds. It is a life medicine or'iiná azee'. It is used to treat colds, influenza, skin diseases, and coughs. The roots are chewed to gain strength.

Globemallow
Spheralacea sp.

'ÁŁTSÍNII

'Á łtsínii blooms in early spring with the wild onions.

The root of this showy yellow flower has a bulb which is edible. During times of starvation, the bulbs were roasted, or were boiled and mashed into cakes for winter use.

Sego Lily
Calochortus nuttali

K'ÍNEEDLÍSHII DĄĄ'

"stinkbug food"

K'ineedlíshii dąą' blooms at night in the sandy areas along the road. It is pollinated by moths. The flowers close when the sun rises. Look for the white blooms in June.

Sand Verbena
Abronia elliptica

COMMON PLANTS OF THE LOW FOOTHILLS

HAASHCH'ÉÉ' DĄĄ'

"food of the holy people"

The flowers of the haashch'éé' dąą' are green. The fruit is eaten raw, or boiled in soup. It is sometimes spread on rocks to dry and stored for winter use. The fruit can then be eaten dry or made into soup. The root is ground and packed in a tooth for a toothache. Haashch'éé' dąą' belongs to the same family as the potato, the tomato, the chili pepper, and tobacco. It can be found on the plateau, in the foothills, and in pastures on the high mesa.

Tomatillo
Lycium pallidum

This shrub is three feet tall. It is usually found growing in thickets of several plants. The ripe fruit is red and looks like a small tomato.

DÍKǪ́ZHÍ

"saltweed"

Díkǫ́zhí is a spiny bush, with round, gray leaves and fruit with two wings. The seeds were used by various tribes for making bread and mush. The leaves were sometimes eaten cooked as greens. The stings of ants, bees, and wasps are treated by chewing díkǫ́zhí and placing it on the sting. Díkǫ́zhí is valuable forage for cattle, sheep, and goats, especially in the winter and early spring. Leaves and twigs are used to color wool yellow. Díkǫ́zhí was also used as a treatment for stomach diseases and as an emetic.

The flat areas along the mesa road in the low foothills are covered by this shrub, which grows two feet tall.

Shadscale
Atriplex canescens

COMMON PLANTS OF THE HIGH FOOTHILLS

Scarlet Gilia
Gilia sp.

DAH YIITĮHÍ DĄĄ'

"hummingbird food"

The red flowers are a favorite of the hummingbird. The plant can be told from the penstemmon by the spreading petals of the flower and the shape of the leaves. The dried leaves are mixed with water and drunk for stomach troubles and for spider bites. The roots have an odor similar to a skunk.

Heart Leaved Twist Flower
Streptanthus cordatus

'AZEE' K'AHII

"fattening medicine"

'Azee' k'ahii grows in the shade of cha'oł in the foothills. The flowers are deep purple. The juice of the root is squeezed into the eye as a treatment for sore eyes. It can be eaten as a green. The root is used as a fattening medicine for livestock.

TŁ'OH'AZIHII TSOH

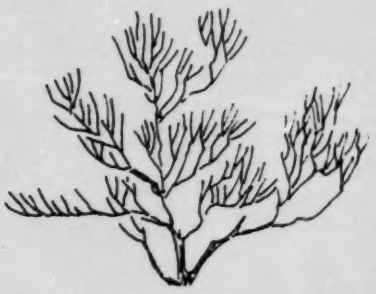
"big medicine grass"

male plant →

← female plant

A tea made from the broom-like stems of this shrub is good for coughs and stomach problems. This is an important winter food plant for livestock.

A common bright green shrub of the high foothills, it grows three to four feet tall. The male plant can be told from the female plant by the shape of the blossoms in the spring.



Mormon Tea
Ephedra viridis

'AWÉÉTS'ÁÁL

"baby's bedding"

After the cream white flowers fade, five long plumes project from each flower head. The small leathery leaves have dots on them. Leaves and stems are pounded, and then boiled with gad branches to make a tan dye for wool. The bark is stripped and softened. It is used as backing for cradle boards, and to stuff pillows and balls. The leaves are used in the Evilway and Enemyway ceremonies. A tea made from the leaves is used to treat appendicitis.

'Awéétś'áál can be found in the washes in the low foothills, but is more common in the high foothills. It grows six feet tall.

Cliffrose
Cowania mexicana

COMMON PLANTS OF THE MESA

'AZEE' DIILCH'ÍŁII

"popping medicine"

'Azee' diilch'íłii has blue flowers and many-fingered leaves.

A common flower of the high mesa, it is a member of the pea family. It improves the soil and is a good livestock food. It was sometimes ground and planted with watermelon for a good crop.

Lupine
Lupinus sp.

DIDZÉ DIT'ÓDII

"soft berry"

The white flowers have five petals. The leaves are round with toothed edges. It blooms in May and June, flowering latest on the mesa top.

This shrub grows eight feet tall. The fruits can be eaten fresh or dried for winter use. Many tribes mixed the berries with dried meat to make pemmican.

Serviceberry
Amelanchier sp.

TSITŁ'IZ

"hard wood"

The showy flowers have four white petals. The dried wood is very hard, and was used for arrow shafts, weaving forks, and planting sticks.

The tall shrub is hard to miss when the flowers are in bloom. Look for it just below the rim on the mesa road in May and June. The leaves are dried and used as tobacco. If ants are swallowed, a medicine of the inner bark is made by mashing the bark and mixing it with water.

Fendler Bush
Fendlera rupicola

CH'Ó

Ch'ó grows with ńdíshchíí in the high parts of the mesa and along the cliffs. Further north, where it grows in large stands, it is an important lumber tree. A tea made from ch'ó branches is used to treat stomach diseases and headaches. Many branches of ch'ó are used in the Shooting Chant and the Chant of the Sun's House.

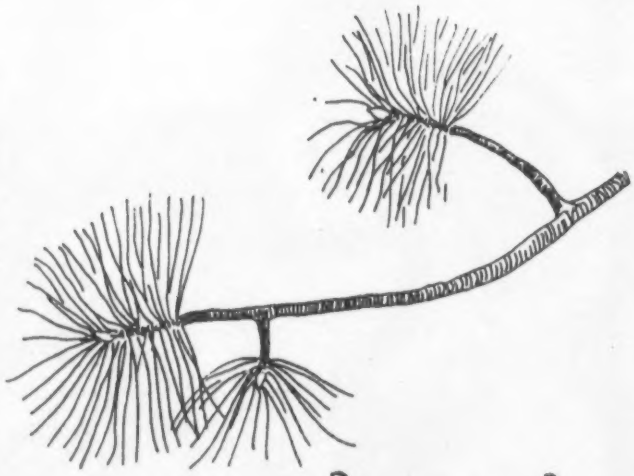
Each needle grows separately and is about one inch long. The bracts which extend from the cone identify the tree as ch'ó.

Douglas Fir
Pseudotsuga menziesii

NDÍSHCHÍÍ

Ndíshchíí is an important lumber tree. Like chá'oł, it is a pine tree. Pine gum is used to coat the inside of water bottles.

The needles are five inches long and grow in bundles of three each. They are located in tufts at the end of the branches. Pollen from this tree is used in the Night Chant.



Ponderosa Pine
Pinus ponderosa

CH'IL 'AGHÁNÍ

"plant that destroys"

The flowers of ch'il 'aghání are greenish white. The poisonous leaves give this plant its name.

Ch'il 'aghání can be found in open areas on top of the mesa, in the shade of ńdíshchíí. It grows in clumps that are one to two feet tall. One species may cause blindness if eaten. Sheep will bloat, if they graze on this plant.

Locoweed
Astragalus sp.